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Saturday
Afternoon Club

THE ODORLESS EXCAVATING APPARATUS

FOR EMPTYING

Vaults, Sinks, Cesspools,

Sewers, Cellars, Wells and Excavations

IN THE DAYTIME WITHOUT OFFENSE.

SECOND EDITION—ENLARGED.

OFFICE OF
THE ODORLESS EXCAVATING APPARATUS CO.,
(Incorporated May 6th, 1874,)
44 North Holliday Street,
BALTIMORE.

BALTIMORE:
PRINTED BY JOHN MURPHY & CO.
PUBLISHERS, BOOKSELLERS, PRINTERS AND STATIONERS.
182 BALTIMORE STREET.
1875.

THE ODORLESS EXCAVATING APPARATUS

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Vaults, Sinks, Cesspools,

Square Cellars Wells and Excavations

THE ODORLESS EXCAVATING APPARATUS COMPANY CONTROLS ALL THE ESSENTIAL PATENTS ON APPARATUS FOR EMPTYING VAULTS AND CESSPOOLS, AND WILL VIGOROUSLY PROSECUTE ALL INFRINGEMENTS OF THE SAME.

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The Odorless Excavating Apparatus.

The baneful tendencies to disease and discomfort resulting from the generation and escape of noxious and poisonous gases by the prevailing system of cleansing vaults and cesspools by the cart and bucket, are well known and understood, not only by all sanitarians, hygienists and practitioners of medicine, but by the intelligent public at large in all civilized countries.

From this cause, not only do individuals and families, but whole communities become afflicted with diseases of a low type, but by their general depressing tendencies they diminish the vital powers and capabilities of resistance to other diseases, and thus throw open the doors for the spread of fatal and blighting epidemics, which impoverish the people by the withering of commercial prestige and reputation.

Utterly impossible would it be to estimate the evils and destruction to health, comfort and life in large towns and cities, resulting from a vitiated and poisoned atmosphere, rendered so through the cleansing of vaults by the old method and the transmission of night-soil through streets and highways in non-airtight carts and wagons.

The pernicious and dangerous effects and tendencies of the old system are therefore no new discovery, but a knowledge of them has existed for many ages of the past, and they have only been suffered to continue until now, because no practicable method has been discovered to thoroughly abate the nuisance and remedy the evils so long and loudly complained of. It is true, many and various have been the means and devices suggested and resorted to as preventives and palliatives of the evils, but all in turn, after pratical tests and trials, have proved either useless or insufficient

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to meet the necessities of the case, or the demands of Boards of Health and the public at large. Partial relief has been sought in regulations forbidding the opening and cleansing of vaults and cesspools during the warm months of the year, but the efforts to faithfully execute such regulations have proved futile and abortive, from the fact, that in large cites there are many vaults that have not sufficient capacity to last twelve months, and others, though having sufficient depth, yet are sooner filled because of heavy rains, overflows, or the springy character of the contiguous earth.

Moreover, the cold and icy seasons are unfriendly to the removal of night-soil by either land or water to considerable distances, from the closing up of the navigable streams, or the bad and almost impassable character of the roads, and besides, in all efforts to utilize this valuable manure for agricultural purposes, much greater difficulties are experienced in the winter than in the summer season; for in the effort to cleanse all the privy-vaults possible of a large city in the cold months, this immense amount of refuse matter is thrown upon the roads or rivers, and into the depots or dumping places in the very worst season for both travel and the manufacturing of poudrette and composts.

Another remedy for all the cesspool evils, including the old cart and bucket plan of removing night-soil, has been sought in the construction of systems of tubular drainage or connecting links between water-closets or privy-wells and the public sewers, thus allowing all the vast mass of human excrement to pass, with the surface drainage, into the rivers and fresh water streams, thereby not only wasting millions of dollars worth of most valuable fertilizing material—which ought to be given back to the soil whence it came, in order to strengthen nature in her efforts to bring forth nutriment for man and beast—but poisoning and polluting the streams from which others may desire to draw their water supply. The legitimate use of public sewers is to conduct the surface drainage, and it is becoming a well settled conviction in the minds of sanitarians that nothing else should be allowed to enter or pass through them. Experience has demonstrated the impossibility of constructing traps capable of preventing, under certain conditions, the driving of sewer gases

through the drains and pipes into houses and chambers. To remedy this and the horrible stenches that continually creep through the sewer-eyes and man-holes along the lines of streets and alleys, air shafts and gas-consuming chimneys have been constructed, but, it is believed, without satisfactory results. Relief from all these nocturnal and atmospheric stenches has been strongly urged and advocated by the friends of earth closets, but however valuable these may be, enough is known to justify the conclusion that large communities cannot be induced to adopt them, because of the heavy expenses and other drawbacks and inconveniences attending their introduction and use.

All these efforts at relief and reform have grown out of the universal disgust and dissatisfaction everywhere manifested in civilized countries, with the miserable old mode of cleansing privy-wells and sinks through the instrumentality of the cart and bucket, and these efforts for relief are but the natural struggle for life and self-protection. People in large and crowded communities are clamoring and panting for fresh and pure air, and are calling upon sanitarians and health boards to remove as soon as possible all removable causes of atmospheric contamination. But the plans here referred to as remedies for the evils under the old system are not all. Inventions of machinery more or less complicated have been brought forward from time to time, but after having been subjected to patient trials, they have been retired from use as insufficient or impracticable. These inventions and machines have been mainly directed to the removal of the contents of vaults and cesspools in airtight tanks, and to this end various pneumatic systems have been proposed, in which several methods of exhausting the tanks have been employed, among them the use of air pumps worked by hand or steam; or, when attached to the tank, such pumps have been made to exhaust the air from it by being geared directly to the wheels of the tank, so that while it was being drawn through the streets to the vault, the air would be exhausted and the tank be in readiness for filling.

In other cases exhaustion has been effected by injecting steam or heated air into the tank, and subsequently condensing or cooling it; or by filling the tank with water and discharging it

through a tube, having its outlet some 35 or 40 feet below. All of these systems, though plausible, have encountered many practical difficulties, and while promptly and freely admitting the excellency of the theory of lifting and passing the contents of privy-wells and vaults directly into airtight receiving tanks, through the medium of pump and hose, mechanical obstacles and difficulties have continually presented themselves, rendering the theory impossible of practical application to the extent demanded.

The greatest and most stubborn of these difficulties have been the inevitable obstruction and choking of the valves of the pumps employed, by the innumerable odds and ends that find their way into sinks and cesspools, such as sticks, stones, rags and articles of old clothing. Strainers have been resorted to, with the view of excluding all matters that would clog the valves of the pump, but with the use of these it was found, that besides the inevitable clogging of the strainer by foreign substances, and even by the usual solid fœcal matter, it was really, in the end, only the more fluid portions of the contents of the cesspool that found their way into the receiving tank for removal to the depots, thus rendering the whole apparatus of little avail. It was, therefore, after these frequent trials and experiments, discovered that what was absolutely needed was a pump so constructed as to raise and force by direct action, and without obstruction to its working parts, the contents of sinks and cesspools just as they occur. To this must be added the requirement, that in discharging the excrementitious matter into the tanks or receptacles, no offense be created by the escape of noxious gases.

APPROACH TO PRACTICAL USEFULNESS.

On the 28th of January, 1868, an original patent was granted to Louis Straus for a Portable Apparatus for the cleansing of sinks and cesspools without offense, the same consisting of the combination of a pump or forcing engine, an airtight receiving tank and a deodorizing attachment—the three important and necessary elements of a successful system.

The purpose of the deodorizing attachment is to consume or destroy the noxious gases that escape from the tank while being

filled, but the apparatus of Straus was found, upon practical test, to be inefficient; only so, however, because of the clogging of the pump, which difficulty and imperfection have been thoroughly and completely remedied by the use of a pump valve of novel and peculiar construction, invented by William Painter of Baltimore, and patented by him August 5th, 1873.

PRACTICAL USEFULNESS ATTAINED.

Besides the patent to Willlam Painter on the pump valve—which was the great feature in bringing Straus' plan to perfection—and the patent of William Painter and Lewis R. Keizer, Oct. 6, 1874, on the pump—which is especially designed and most admirably adapted to its work—ten additional patents have been granted to William Painter on the "Pitting" and "Transfer" Apparatuses, and also on details of construction, which render more convenient and effective the working of the apparatus.

All the patents named are owned and controlled by The Odorless Excavating Apparatus Company.

Patents have also been secured in Great Britain, France and Belgium.

The great cardinal features of this system are: An efficient Direct-acting Pump, an Air-tight Receiving Tank and a Deodorizing or Gas-consuming Attachment. By the use of

THE ODORLESS EXCAVATING APPARATUS,

An excellent view of which is shown on page 8—the contents of vaults, sinks, cesspools, cellars, wells, excavations, sewers and traps can be removed without creating any nuisance or offensive odor, and that too, during the ordinary working hours of the day, and with the greatest efficiency and dispatch.

As before stated, the chief point of novelty in the pump employed, lies in the valves. Virtually, these appliances, by their construction and positions in the pump, form a continuation of the connecting hose leading from the vault to the tank, and being in direct line with each other, offer little resistance to the passage of

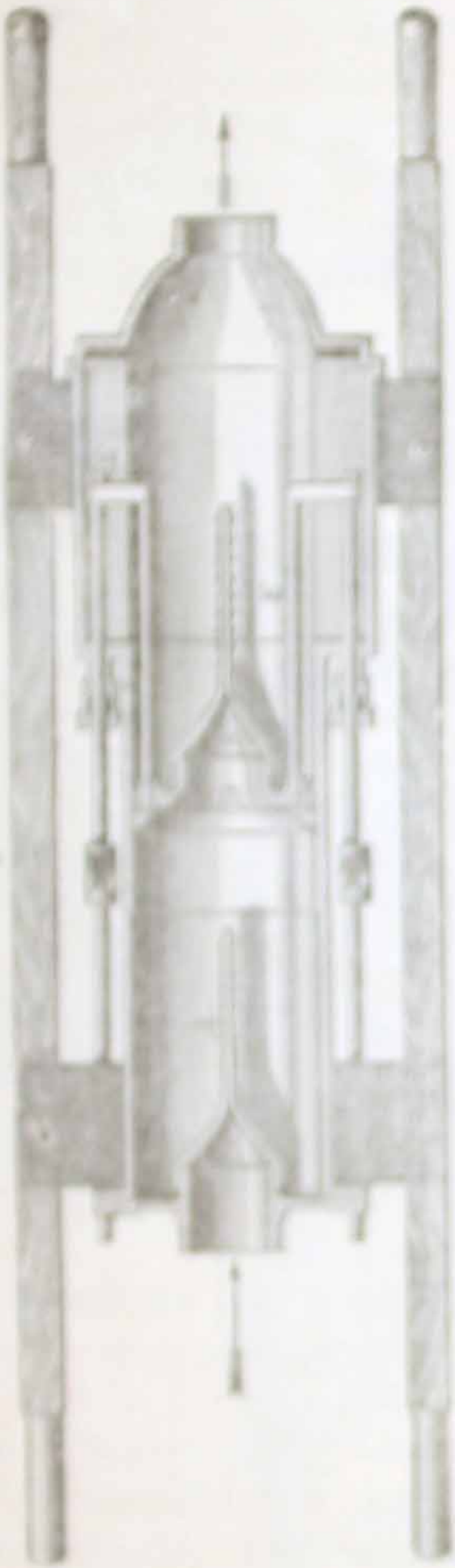

Fig. 2

SECTIONAL VIEW OF PUMP.

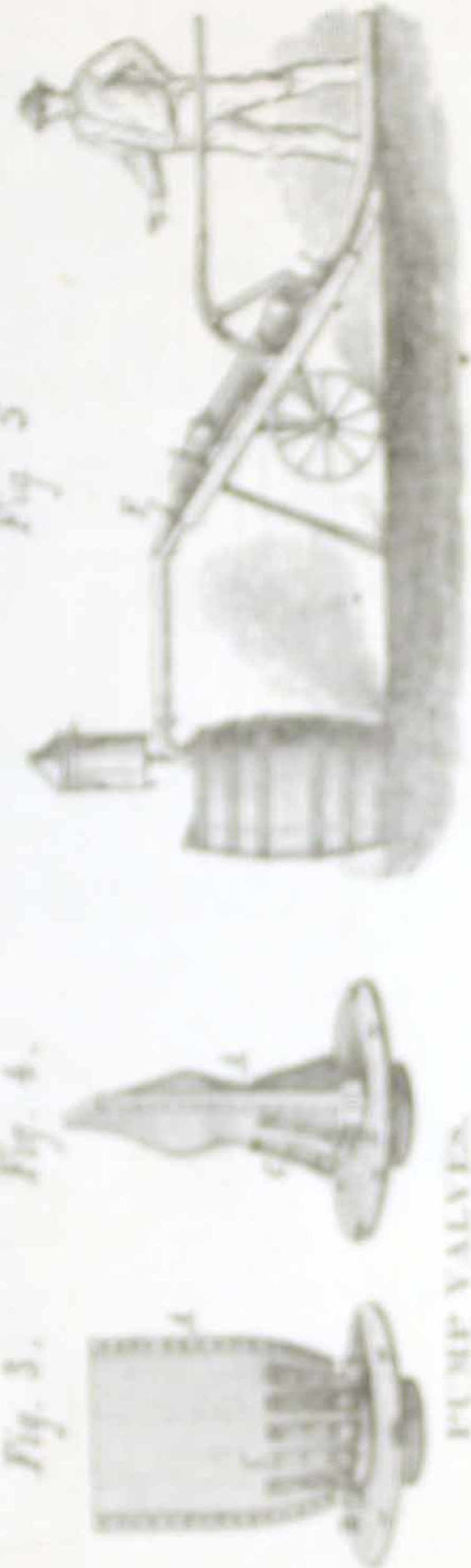

Fig. 5

Apparatus as Employed in Washington.

Fig. 4.

Fig. 3.

PUMP VALVE.

the material. The valve, as shown in the sectional view of the pump, Fig. 2, and in the smaller engravings, Figs. 3 and 4, is made of soft, elastic, vulcanized rubber, A, tubular in form, and being composed of two flat pieces placed face to face and riveted

Fig. 6.

PUMP TRUCK AND APPARATUS.

together at their edges, is, in its normal condition, collapsed. Its length is equal to some three diameters when open. One end is distended, and, embracing a collar, B, that surrounds the port, is securely fastened thereto by clamps and bolts. Straps or braces, C, are arranged at the base of the valve to directly guard the port and prevent it from being forced into the port by external pressure. The valve is therefore, essentially, a collapsible tube, one end of

Fig. 7.

"PITTING" APPARATUS—FOR REMOVING SOLID MATTER AND LARGE OBSTRUCTIONS.

which is permanently distended to embrace the port through which the material passes. The passage of material in one direction through the valve, is direct and unresisted, while it cannot take place in the opposite direction, by reason of the collapse of the valve by the pressure on its sides. The valve, being of much greater length than diameter, presents an extended bearing or contact surface between its two sides, which closely engage and surround whatever obstruction may be passing through it at the time

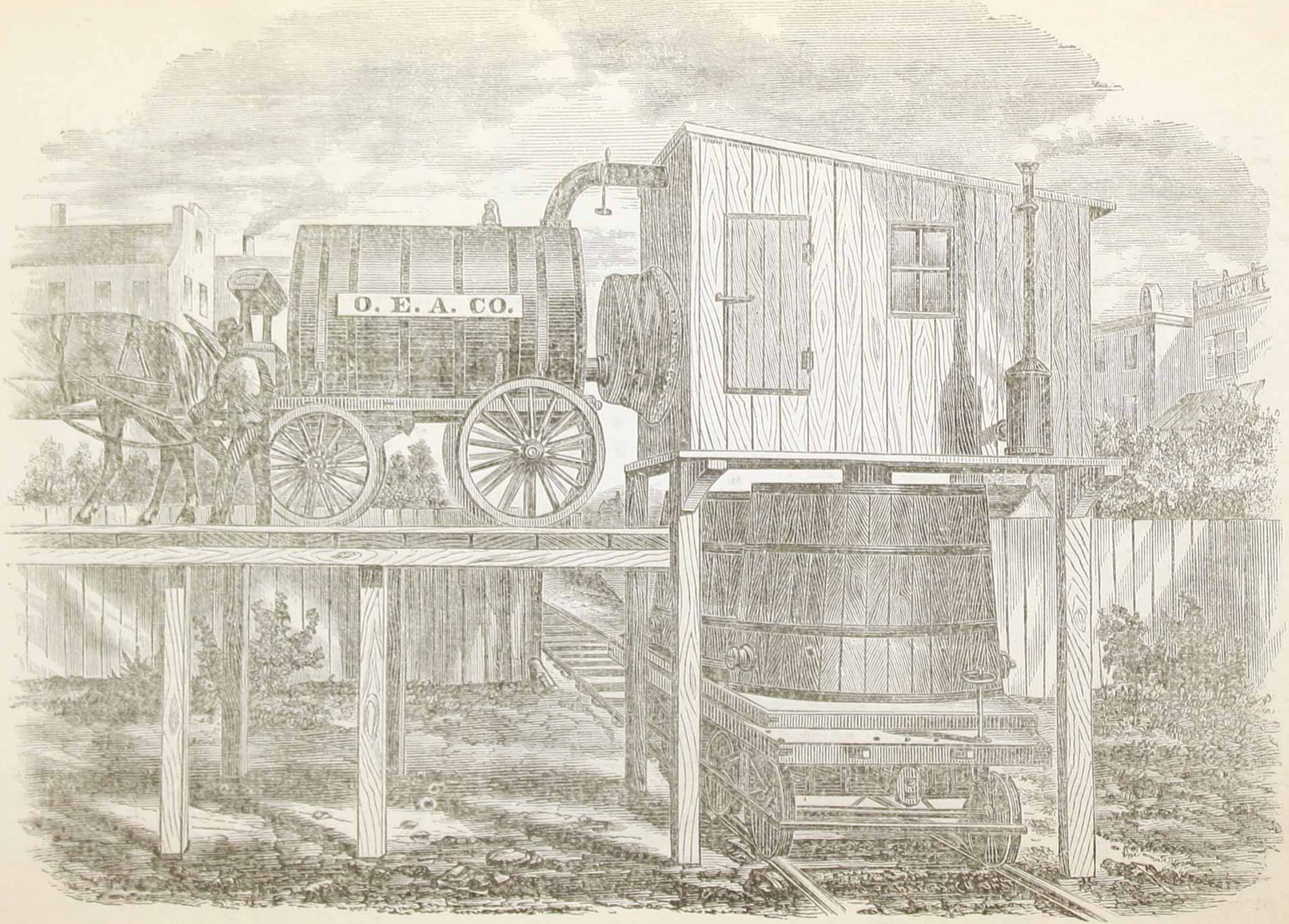

Fig. 8. Apparatus for Transferring Night-Soil to Rail Road Tanks, Boats, Barges, &c.

of its collapse, forming about the obstruction an air-tight joint, as shown in Fig. 4. At the succeeding stroke of the pump the valve is again distended, and the obstruction passes forward without in the least interfering with the action of the pump.

The pump is single-acting, (Fig. 2,) and is form a straight cylinder, provided with one fixed valve, (the induction,) and one movable—both marked A in the engraving—the latter attached to the piston D, moving in the centre of the cylinder.

The passage of material through the pump is therefore direct and without counter currents; and such is its remarkable capacity for passing obstructions, that sticks, stones, shavings, rags, ropes, bottles, boxes or other obstructions—and indeed an entire pair of heavy cloth pants or a full sized army blanket—are pumped through with ease. In fact, any obstacle not too large to enter the suction hose, and of whatever length, will pass freely through the valves without interfering with their action. As an instance, a large rope some forty feet in length has been pumped through with the greatest facility.

This capacity of the pump for passing all manner of obstructions is of vital importance and renders the use of a strainer on the end of the suction hose superfluous, and it is used with a clear, free opening. Usually this opening will not become obstructed, the hose being of four inches diameter inside, but in cases where a large quantity of tough and tangled material is present in the vault—such as masses of shavings or rags—a curved foot-pipe is used, having an opening on its side of the full capacity of the hose. Should an accumulation of tough materials occur at this point it is occasionally removed by the action of a sliding blade or cutter attached to a rod. The cutter severs the mass, allowing that portion which has entered the foot-pipe to pass forward; by this means, the entire mass may be removed from the vault.

This device is employed only in the worst cases, but by its use the capacity of the apparatus is greatly increased.

The rods, E, moving the pistons, are placed at the sides of the pump, and do not obstruct the opening through it.

For convenience and portability the pump is mounted on wheels placed near one end. When in position for work it stands at an angle of some twenty-five degrees elevation, and is conveniently

operated by the brake or lever. By reason of its inclined position, the air contained in the pump is displaced with facility, and the valves retain their charge. The pump, therefore, seldom requires charging, even when used to raise the material a great distance.

The supporting of the pump on wheels also renders the discharging of its contents and cleansing very convenient, by reversing the inclination, in which position it may also be readily charged, when necessary, through the induction port, the discharge being closed.

The couplings, F, used for connecting the sections of hose together and to the pump and tank, are of novel construction and designed especially for this purpose. Those attached to the pump and tank are provided with fixed wrenches, by which the connection is quickly and perfectly effected. When the hose is disconnected, both portions of the couplings are sealed with suitable caps and the entire apparatus rendered air-tight.

The receiving tanks used are of wood, of ordinary construction, provided with inlet and discharge openings, and also with an indicator for showing the quantity of material contained. Its action is sensitive and accurate.

The tanks are usually made of 640 gallons capacity, and drawn by three or four horses, according to the nature of the streets or roads. The size may, however, be varied.

The coupling attached to the induction elbow at the top of tank is provided with a perforated sealing cap containing a sponge which is saturated occasionally with crude carbolic acid, the object being to deodorize the noxious gases arising from the contents of the tank while passing through the streets, and also to relieve the tank from any undue pressure from a like cause.

A flanged collar, attached to the top of the tank, supports the charcoal furnace in which the noxious gases displaced from the tank while being filled, are deodorized and rendered entirely inoffensive. This form of deodorizer is employed as being the most efficient and economical. The purifying action of the fire is immediate and intense, and the displaced gases after passing through it, are entirely without odor—indeed, they are consumed.

After the tank is filled, the deodorizing furnace is removed, and a screw cap seals the opening in the tank.

The pump, hose, deodorizing furnace and fixtures are carried on a spring truck, low behind, constructed especially for the purpose. The truck with pumping apparatus complete is very clearly shown in Fig. 6, the deodorizing furnace being carried at the rear, where the heat from it may not be objectionable.

Three men accompany the truck and constitute the "pump-gang."

While the apparatus thus described is so thoroughly efficient in removing the contents of vaults and cesspools, there are occasional instances in which the excrement has become so hardened from various causes, and others in which there are accumulations of foreign materials of such a nature as cannot be removed by the pump. Though such cases are not frequent, a complete system demands that efficient means be provided for removing solid matter and large obstructions, as boards, bricks, tin cans and crockery, and also that it be done in the ordinary working hours of the day, with as little offence as by the pumping apparatus just described. To accomplish this, the process of digging with pick and spade is necessary in such instances, the contents of the vault being removed in small barrels of 25 gallons capacity, fitted with handles and airtight covers.

To screen from view the operation, which would otherwise be a most objectionable one when performed in the day time, and also to prevent the escape of noxious gases during the digging of the excrement and filling of the barrels, an exceedingly simple and effective method—shown in Fig. 7—is employed.

A canvas awning, so formed as to be conveniently attached to any privy, surrounds and encloses the doorway, having ample space within to contain one or more barrels. Within this awning or screen the operation of filling the barrels is carried on. A charcoal furnace, connected with the interior of the awning by a flexible air-pipe, draws off the offensive gases that arise within and consumes them. The natural draft of the furnace is sufficient to withdraw the gases so rapidly that none can escape from the enclosure, and the work is done absolutely without offense.

The "pitting" apparatus—as this is technically called—and the barrels for the night-soil, used in connection with it, are carried on a spring truck similar to that shown in Fig. 6. Two men and

a boy are competent to work this apparatus successfully. The expense attending this adjunct of The Odorless Excavating Apparatus is trifling, and the results of its use in the highest degree satisfactory. The entire work of a city can now be done by the Improved System, and this, not only without offense and on correct sanitary principles, but in most cases at less rates than by the old method.

The most careful attention and mechanical skill have been used in perfecting the details of the apparatus, and all contingencies, complications and conditions difficult of attainment avoided, the apparatus being of the most simple and practical character, and efficient in the hands of unskilled workmen.

MODE OF OPERATING.

When vaults or cesspools are to be emptied, the receiving tank, pump, hose and charcoal furnace or gas-consumer are taken to either the front or rear of the premises requiring the work to be done. The pump is placed as near the vault as possible and the suction hose attached, one end being let down into the vault. Next, the discharge hose is attached to the pump and tank. The charcoal furnace it placed in position on the top of tank, the pump set in motion, and in a few minutes the tank is filled with the contents of the vault or cesspool, the gases escaping from the tank during the process, passing through the charcoal fire, in which they are thoroughly deodorized. The deodorizing furnace is then removed, the hose disconnected, the couplings sealed, and the tank with its contents is in readiness to be removed to the dumping ground, depot or wharf, no bad odor being created or left to linger about the premises, as is more or less the case when such places are cleansed by the cart and bucket plan, resulting from the spilling and slopping of the contents of the buckets in passing them from the vault to the street. Should the vault be a large one, a second and third tank—in fact, any number—can be filled in succession with no delay except that required in changing the hose from one to the other.

A tank of 640 gallons capacity can usually be filled in from ten to twenty minutes, although it has been accomplished in five. The time depends on the nature of the material and the distance it is required to be pumped.

Usually the floor of the privy is not necessarily disturbed or removed, as the end of the hose can be passed through the opening in the seat. The hose can be used of any length, so as to pass through long passages, alleys and even rooms and chambers without incommoding any one with noxious odors.

As the pump is always placed near the vault or sink and concealed from public view, no disturbance is created on the street by reason of its operation, neither is there the slightest escape of offensive gases, and while the tank is being filled, pedestrians are usually entirely ignorant of what is transpiring, even though the tank may, from necessity, stand on crowded or thoroughfare streets. Our large engraving will give an excellent idea of the complete apparatus as it appears in use.

TROUBLE ABOUT THE PAYMENT OF BILLS OBVIATED.

No trouble or difficulty need be encountered with property owners or others in regard to the correctness of bills or charges made, as the work is done in the daytime and the party interested in the payment of the expense, can personally, or through his representative, overlook the operation. The indicator in the end of the tank will at once show the correct number of gallons or cart loads removed, and therefore the amount of the charge for cleansing.

APPEARANCE OF THE TANKS UPON THE STREETS.

The tanks for the reception and removal of night-soil are clean and nicely painted, and therefore pass freely through the streets at all hours of the day without attracting any especial attention, or creating or emitting the slightest offensive or disagreeable odor.

REMOVAL BY RAILROAD, BOATS OR BARGES.

In addition to an effective system such as that already described, by which the removal of night-soil is accomplished in accordance with the most reasonable demands of sanitary science, it is requisite that railroad or water facilities, (and particularly the former,) be made available in transporting the contents of the tanks to more distant places of deposit—even from five to twenty miles—than is practicable by the old plan of removal by cart and bucket.

With The Odorless Excavating Apparatus it is entirely practicable to transfer the night-soil from the air-tight tanks in which it is collected, into other and larger tanks placed upon cars, or into boats or barges—no offense being created by the operation. The depots for such transfer may therefore be located at very convenient distances, while the dumping grounds or places of final deposit are at a distance of many miles.

Municipalities are thereby relieved of the burden and expense of dumping grounds in close proximity to cities, which become still more objectionable as population increases.

By the use of The Odorless Excavating Apparatus for removing night-soil, in connection with its transportation by rail or by water, the system is rendered so complete that the offensive material is not for a moment exposed to the open air, from the time it is taken from the vault until it is deposited at the distant dumping ground.

Fig. 8, illustrates the method employed for transferring the night-soil to car-tanks. It is equally applicable to boats or barges.

An airtight box or chamber of suitable size is built over the track. At the front end of the chamber is a flexible attachment, near the lower edge of which is an elastic rubber ring made to fit tightly over the neck of the discharge gate of tank, which is backed up into proper position.

From the top of the closed chamber a flexible air-pipe extends to the inlet opening of the tank to which it is coupled. The bottom of the chamber is inclined in all directions to the centre, at which point it is connected with the car-tank by an airtight attach-

ment. When thus connected, a workman in the chamber opens the discharge gate and the night-soil is discharged on the inclined bottom of the closed chamber, passing thence into the car-tank. The gases displaced during the filling, pass from the car-tank into the chamber and thence through the air-hose into the tank.

To avoid the escape of any excess of noxious gases, a charcoal furnace is attached to the chamber from which the gases are withdrawn and consumed.

This method of discharging enables the workman to remove from the tanks with a hoe or scraper, all heavy deposits, and also to thoroughly cleanse the discharge gate without exposure to the air.

The transfer is thus effected without the escape of any offensive odors, and the night-soil, which to dispose of has been a puzzle to all large municipalities and a vexed question to sanitarians, can be removed quietly, conveniently and without offense into the rural districts, and there utilized for the benefit of agriculture.

SUCCESS AND RAPID INTRODUCTION OF THE SYSTEM.

Although but little more than one year has elapsed since its first introduction, so perfect has been the working of the system, and so radical its advantages over the old method, that it has received the endorsement of the most eminent sanitary authorities of the United States, and has already been successfully established in the cities of Boston, Providence, Pawtucket, New York, Brooklyn, Jersey City, Newark, Elizabeth, Philadelphia, Wilmington, (Del.) Baltimore, Washington, Georgetown, Alexandria, Norfolk, Richmond, Charleston, Savannah, New Orleans, Memphis, Chicago, Grand Rapids and Detroit. The remarkable success of the system in so brief a time gives promise of its universal adoption at no distant day.

The Odorless Excavating Apparatus has been adopted in the National Capital to the entire exclusion of the old bucket system. The plan there employed is represented in Fig. 5, the night-soil being pumped into barrels to which the deodorizing furnace is temporarily attached. When filled the barrels are sealed and transferred to railroad cars and barges and taken to the distant dumping grounds.

The system has been in constant and exclusive use there since Oct. 15th, 1873. From 700 to 1,000 vaults are emptied weekly.

After a preliminary trial of one year, in which the system became firmly established in popular favor, the Board of Health of the District of Columbia awarded to The Odorless Excavating Apparatus Company, the contract for the entire work, for the term of five years from Oct. 15th, 1874. Reference is made to the testimony of the Board, and to the press of Washington City, extracts from which will be found elsewhere.

The prompt and vigorous action of the Board, in abolishing the the old bucket system and substituting The Odorless Excavating Apparatus, fully met the urgent public demand for reform in this important work, and a number of Councils and Health Boards in other cities have since taken similar action and adopted The Odorless as the only system for cleansing vaults; among them the cities of Newark and Elizabeth, (N. J.,) Wilmington, (Del.,) Norfolk and Richmond, (Va.,) New Orleans, Chicago, Detroit and Grand Rapids.

The Board of Health of the District of Columbia having taken the initiative in this important sanitary reform, their "declaration" and ordinance are here given, upon which similar action on the part of the other cities named, has been predicated.

Declaration and Ordinance in regard to Night-soil

"By virtue of authority vested in the Board of Health of the District of Columbia, by section 26 of an Act of Congress, approved February 21, 1871, and entitled "An act to provide a government for the District of Columbia," said Board does hereby declare that the present system of removing night-soil, cleaning privies, privy-boxes, vaults, sinks and cesspools within the cities of Washington and Georgetown, and their immediate and more densely populated suburbs, by buckets or other process, agitating and exposing the contents thereof in the open air, and of transporting said contents in carts or other vehicles, not air-tight, through the streets, avenues, alleys or other public places within said cities and the immediate and more densely populated suburbs thereof, is a nuisance injurious to health, and hereby prohibits the same from and after the 15th day of October, A. D. 1873."

An Ordinance *to provide for the Removal of the Contents of Privies, Privy-boxes, Vaults, Sinks and Cesspools within the cities of Washington and Georgetown and the suburbs thereof, and the transportation of said contents therefrom.*

"*Be it enacted and ordained by the Board of Health of the District of Columbia,* That from and after the 15th day of October, A. D., 1873, no part of the con-

tents (except substances not soluble in water) of any privy, privy-box, vault, sink or cesspool within the cities of Washington and Georgetown and the immediate and more densely populated suburbs thereof, shall be removed therefrom, nor shall the same be transported through any of the streets avenues, alleys or other public places of said cities and their suburbs aforesaid, except as the same shall be removed and transported by means of some air-tight apparatus, pneumatic or other process, so as to prevent the contents of said privy, privy-box, vault, sink or cesspool from being agitated or exposed in the open air during said process of removal and transportation.

"SEC. 2. *And be it further enacted and ordained*, That any person or persons violating the provisions of this ordinance shall upon conviction thereof, be punished by a fine of not less than $10 or more than $50 for each and every such offense.

"Passed September 16, 1873."

Extract from Report of Board of Health of the District of Columbia, for 1873.

PRESIDENT'S REPORT.

"The impregnation of air and water by human excreta, and its effect upon health by the production and propagation of disease, is no longer a mooted question. That cholera, dysentery, enteric fever and various epidemic maladies, are due to this cause, is now an established sanitary fact. The two objects in connection with this subject, which, at present command attention of health boards, are:

"1. The removal of human excreta, from the places of primary deposit in an inoffensive manner and without detriment to public health.

"2. The utilization of the material thus removed for purposes of agriculture.

"The first comprises not only the removal of excreta from privy vaults and boxes without offense, but the transportation, in like manner, to places of final deposit. In both these particulars the Board of Health has instituted wholesome and necessary reforms.

"It is remarkable that the system of scavengering, by which the contents of vaults and boxes are removed by buckets at night, transferred to open carts, and transported through the public streets, should have been inaugurated in civilized communities, or, introduced, should have been continued to so late a period. The work itself is filthy beyond description, and the poisonous stench arising from transportation, bearing as it does the germs of disease and death to numberless households, inflicts an outrage upon decency, health and common sense, which should no longer be tolerated.

"When the present Board of Health entered upon its duties the greatest irregularities prevailed. Privies were flagrantly neglected, and the contents, when removed, dumped promiscuously on the suburbs, along the river front, and not unfrequently within the city limits. A contract was entered into by the Board with certain responsible parties to receive the night-soil from the scavengers and convey it by boats or barges to a remote point on the Potomac, where it might occasion no possible offense. Although this part of the work

was in process of successful accomplishment, the graver nuisance continued, unremedied and untouched. I refer to the late and long-existing abomination of emptying privies at night by the bucket system, and conveying the contents by open and leaky carts for indefinite distances through the city, thus constituting the most fearful nuisance which can possibly affiict a community.

"After careful and patient investigation into the most improved methods, the Board has at length demonstrated by experiment and experience that this greatest of nuisances (the bucket system) can be substituted by a plan of removal less expensive than the late method, by which privy-receptacles may be emptied by daylight and their contents transported to the dumping grounds without the slightest offense to the olfactories or risk to the public health. Never, perhaps, was the proper mode of disposing of night-soil more thoroughly discussed, in all its aspects, as by this Board, or conclusions reached after more patient inquiry and experiment. No ordinary difficulties were arrayed against the introduction of the new plan, not the least of which was the opposition of the scavengers, whose occupation was imperilled by the proposed reform. With full appreciation and sympathy for the discomfiture and loss this change would necessarily inflict upon this worthy class of our fellow-citizens, the Board, regarding simply their duty, determined to exercise their full powers in the correction of an intolerable offense. The old system was therefore declared a nuisance injurious to health, and the new method adopted in its stead. The Governor of the District with his usual sagacity and decision, seconded the efforts of the Board, and the bucket system, which had been the prolific source of annoyance and infection for so many years, ceased to exist. The apparatus now in use is a recent invention, obviating the objections made to the various pneumatic pumps, whether the exhausting process is effected by hand or steam. The great need was for a pump 'so constructed as to raise and force, by direct action and without obstruction to its working parts, the contents of sinks and cesspools just as they occur, and their discharge, without exposure, into air-tight tanks.' This is accomplished by the machine used by The Odorless Excavating Apparatus Company, with whom a contract has been entered into by the Board for the period of one year. 'The apparatus,' as tersely described by the Company, 'consists of a portable pump—with valves of peculiar construction—for raising the contents of the vault, an airtight tank, into which the material is discharged through conducting hose, and a charcoal furnace in which the noxious gases are consumed and rendered entirely inoffensive.'

"It is not to be presumed that a system so entirely new should be put at once into full operation without encountering difficulties and delays only to be corrected by time and experience; but considering the amount of work to be done, and the necessary appointment of inexperienced operatives, the success of the pump arrangement has been simply wonderful. It is now reduced to a method by which its triumph over all obstacles seems fully assured."

HEALTH OFFICER'S REPORT.

"Fortunately for the health and comfort of our people, the thundering of the night carts through the streets, and the horrible, sickening odor consequent

upon the midnight occupation of these scavengers, are now incidents to be forgotten, never again to be experienced in this city, the new Odorless System of removal of night-soil by a pneumatic process being in successful operation, and marking a most important epoch in the history of sanitary improvements in the District of Columbia."

Board of Health of Wilmington, Delaware.

Report of Special Committee appointed to examine and enquire into the merits of The Odorless Excavating Apparatus.

"The Committee on Contracts and Licenses in submitting their report, beg leave to say that, in pursuance of a resolution passed at the last meeting of the Board, they visited Baltimore for the purpose of making a minute examination of the character and operation of a newly invented machine, designed for the cleansing of cesspools, and known as 'The Odorless Excavating Apparatus.'

"The Apparatus was put into service in the presence of the Committee and his Honor, the Mayor of this city, who, by invitation, accompanied the Committee, and in every particular it fully confirmed all that had been promised for it by the patentees, and satisfactorily met every expectation the Committee had formed respecting its merits and capability to do whatever had been claimed for it. With four men, all told, it passed from a well that had not been cleansed for twelve years previously, 480 gallons of night-soil through one hundred feet of four inch rubber hose, into an air-tight tank, in the space of five minutes time, and in less than two minutes thereafter the couplings were loosened, the hose detached and the tank was ready to be drawn away with its load, weighing two tons. Having been emptied of its contents, the tank returned for its second load, which was received and was ready to be driven off within eleven minutes. The difference in time between the first and second loads was caused by the fact that the last load had to be drawn from a greater depth in the well. This operation was performed in the daytime at the palatial residence of a prominent citizen of Baltimore, who was present during the greater part of the time, and who, upon its completion, expressed his unqualified approbation and satisfaction with the work.

The hose was stretched from the well some fifty or sixty feet along his private yard to an adjoining street, in the rear of his premises, and was then attached to the tank in full view of the neighbors and passers by. During the whole operation not the slightest indication of anything offensive to sight or smell could be detected. It was at this as, we had been informed by disinterested people in Baltimore, it had been at every other trial, a complete success.

Your Committee, to obtain further information, also waited upon the Mayor of Baltimore, Hon. Joshua Vansant, and during a pleasant and most agreeable interview with that gentleman, who very cordially received our delegation, he expressed his entire approbation of the machine, added his testimony unreservedly in favor of its introduction in that city, and intimated that in his opinion it was destined to work an entire revolution in the manner of cleansing vaults in all the large cities of the Union.

From every quarter our inquiries were met with the same answers—assurances favorable to the merits of the machine. In view of these facts, therefore, your Committee earnestly and urgently recommend its introduction and use in this city as the best method of cleansing vaults and cesspools without giving offense to the most delicate sensibilities."

(The Odorless Excavating Apparatus was subsequently adopted by the Board of Health of Wilmington, to the entire exclusion of the old method.)

Board of Health of Philadelphia.

Extract from Report of Special Committee, appointed to examine and enquire into the merits of The Odorless Excavating Apparatus.

"*To the President and Members of the Board of Health.*

"*Gentlemen:* Your committee, to whom was referred the subject of an improved and unobjectionable method of removing the contents of privy-wells and cesspools, and whose visit to Wilmington, Del., was for the purpose of practically testing a much-lauded system lately introduced in that city and now in daily use, beg leave to present the following report:

"This subject was referred to at considerable length in the last annual report of the Board, and the suggestions then made may be advantageously repeated, in order to bring more directly to the attention of the Board the necessity for a change in the present system.

"'Although privy-wells are fast becoming superseded by water-closets, the number remaining is by no means inconsiderable, and a long time will elapse before, under the most favorable circumstances, they will be generally superseded. The present method of removing the contents of wells (the 'bucket system' as it has been called) being very objectionable, any inquiry or effort instituted with the object of averting the annoyances and injurious effects of this system, now universally adopted in our city, should meet the encouragement of the authorities and the hearty support of citizens.

"'Within a few years suction power has been applied for exhausting the contents of privy-wells, and a variety of apparatuses have been devised upon this principle, for rendering the work of cleansing free from all objections.

"'A patent pump has recently been invented, which, it is said, possesses advantages over any heretofore in use. This superiority is claimed on account of a peculiar construction of the valves, by which a capacity for passing obstructions has been secured.'

"To examine into the merits of this Apparatus and to see it in operation was the object of your committee's visit to Wilmington. Your committee were very kindly received by representatives of the Board of Health of that city and by the President of Select Council and other officials, and every facility was extended for obtaining a correct knowledge of the principle of the machine and the mode of its application, and as the result of the inquiry, we beg leave to

recommend the adoption in our own city, as soon as practicable, of the new method of emptying privy-wells and cesspools by suction power, of which the apparatus in question appears to be the best exponent. A full description of the apparatus may be found in the accompanying pamphlet.

"The fact that Baltimore, New Orleans, Brooklyn, New York, Savannah, Wilmington, Del., and other cities have adopted the system after proper investigation indicates that its advantages are real and its value undoubted.

"Its advantages are manifold. The work can be performed in the day time; it is a cleanly and odorless method from beginning to end; and it is economical and practicable. We therefore desire to recommend it as a sanitary measure that possesses manifest advantages over the old system, and hope that it may have accorded to it a fair trial in our own city. Your committee therefore recommend the following:

"*Resolved*, That the Board of Health favor the new and improved method of removing the contents of privy-wells and cesspools without offense, by means of air-tight receiving tanks, pumps and hose, and that they will consider favorably applications for the license of responsible parties who propose to use such apparatus as may be approved by the Board, the work to be done in conformity with the health laws and regulations of the Board."

JAMES STEELE,
WM. H. FORD,
CHAS. H. BENNETT,
Special Committee.

July 24, 1874.

Communication from Health Commissioner

Jas. A. Steuart, M. D.

In a communication from the Health Commissioner to the City Council of Baltimore, Sept. 23rd, 1873, recommending The Odorless Excavating Apparatus and an ordinance, permitting its use in the daytime, he says:

"*To the Honorable, the City Council of Baltimore.*

Gentlemen: From a remote period the city of Baltimore, as well as other large cities, has suffered from an intolerable nuisance, from which there seemed to be no possible deliverance. I allude to the ancient and vile mode of emptying privies of night-soil by buckets, &c., and which, I regret to say, is continued to this day, to the incalculable injury and distress of all densely populated sections.

"It is truly a matter of surprise, upon reflection, that amidst the innumerable improvements of our highly civilized and advanced age, such a vestige of barbarism should have been tolerated during so long a time.

"This can only be accounted for by an understanding of the difficulties encountered by those who sought to improve upon the ancient mode, first by the failure of many succeeding inventions, and secondly, the stupid, ignorant, and selfish opposition of those who are invariably found blocking the pathway of improvement.

"It is to this cause, (in the opinion of your Commissioner of Health,) a large part, if not all the cases of cholera infantum are to be attributed. The fearful mortality from this cause is sadly shown. The foul air or poisonous gases which are set free and disseminated throughout the atmosphere, are necessarily forced into the lungs of all who dwell in the more densely populated portions of the city. The heated atmosphere of a July night necessarily obliges all the windows to be kept open, and the poor, helpless little babe, already depressed and distressed by the heat, sinks and dies under the poisonous stench poured through the open windows of its sleeping apartment, from some freshly opened privy or passing night cart. These, gentlemen, are no pictures of the imagination, but hard and cruel facts, which have desolated many a stricken household.

"It has remained for the present day and generation, to furnish the longed-for relief and deliverance from this old and fruitful source of disease and disgust.

"To the enterprise and ingenuity of a Baltimore firm of mechanics, we are indebted for an invention which, in the opinion of your Commissioner of Health, is as near perfection for the purposes for which it is intended, as it is possible to approach. I need not enter into a detailed description of the apparatus and modus operandi, as most of the members of your honorable body are familiar with its construction and practical working powers.

"This admirable invention entirely does away with the nuisance of the old plan, and, in a sanitary point of view, is destined to prove an inestimable blessing, as well as a credit to the mechanical skill and enterprise of our State and City.

"I therefore commend it most earnestly and respectfully to your favorable consideration, and offer the following addition to the 37th Section of Ordinances, sub-title, 'Health,' Baltimore City Code.

"SECTION 1. *Be it enacted and ordained by the Mayor and City Council of Baltimore.* That the Board of Health be, and is hereby authorized and empowered in its discretion to appoint one or more persons, who shall at his or their own cost be supplied with suitable conveniences to clean sinks and privy-vaults in the City of Baltimore during the day or night time, provided that no annoyance to sight or smell shall arise therefrom.

"SECTION 2. *And be it enacted and ordained,* That the said Board of Health shall, before giving a permit to any person or persons for the cleaning of vaults or privies as provided for in the first section of the ordinance, demand and receive from such person or persons a good and sufficient bond for the proper performance of the work to be done without annoyance to sight or smell to the citizens of Baltimore.

"(Approved by the Mayor, Nov. 1, 1873.)"

Extract from Report of Board of Health of Baltimore, for 1873.

"The late City Council have distinguished their administration by the passage of an ordinance permitting the use of 'The Odorless Excavating Apparatus,' for emptying privies in the day time. This is the inauguration of a new era, and destined to prove one of the greatest blessings of the age.

"As stated in a communication on the subject to the late City Council, your Commissioner holds that a large porportion of the cases of cholera infantum in all large cities during the heated term, is to be ascribed to the ancient and vile mode of doing this work, as well as to its transportation through the streets of the city, poisoning the air which is wafted into every open window."

Extract from Report of Board of Health of the District of Columbia, for 1874:

PRESIDENT'S REPORT.

"The removal of human excreta has been one of the vexed problems of centuries. Shall it be carried away through public sewers? Is it practicable perfectly to avoid the reflux of sewer gases into human dwellings by the best known construction of those conduits? And, if practicable, is it not of paramount consideration to utilize the excremental material in such manner as to improve agriculture, and thus contribute to the substantial wealth of the nation? These questions have been exhaustively discussed. In some cities of Europe, only the surface drainage, waste water and slops, are allowed to enter the public sewer. While trusting that such a reform may soon become universal, we must treat the whole subject from the existing stand point. Hopeful as we may be of the period in the near future, when not a drop of urine or particle of solid excremental matter shall enter the common sewer, but when all the excreta shall be utilized, we are convinced that epoch has not been reached. We must see now that this necessary evil be placed under the best possible condition for the conservation of health. Until water closets shall be abolished, as they must be in the progress of time, we must endeavor to render them, as far as possible, void of offense and detriment. * * * * *

"In regard to the removal of night-soil from vaults and privy boxes, a word in addition to what has been so well expressed by the health officer will not be considered inappropriate. The Board of Health, when organized, found existing in the District no graver nuisance than that by which human excreta was removed from the usual places of primary deposit. The noisy night cart, disturbing the slumber of the citizens, reeking with disgusting odors, making its slow transit through streets and thoroughfares by night, giving out at every step of its progress the germs of fatal diseases, seems now like a troubled dream compared with the method at present in use. Armed by Congress with plenary power to abate such a nuisance, the Board of Health boldly assailed this growing mischief, and controlled it. Anxiety was felt to discover some method by which, while effectually removing the contents of vaults and privies, neither

offense nor injury to health might ensue. There was then in use in New York, an apparatus upon the principle of the sealed tank and suction pump, in regard to which a correspondence was held with the Board of Health of that city. Subsequently, a committee of the Board visited New York for the purpose of witnessing its operations, and returned favorably impressed. Not long after, the machine itself was brought to Washington, for the purpose of testing its merits, and the Mayor, City Council, and Health Commissioner of our neighboring city of Baltimore, invited to be present. The experiment was publicly made, when to our great mortification and dismay the apparatus proved, if not an utter failure, a very partial and unsatisfactory success. The Board continued its researches, discussions were held weekly, and experiments made indicating the desire felt to discover some more efficient mode of correcting this serious evil. The objects to be obtained were the removal of human excreta from vaults and privy boxes in an inoffensive and innoxious manner, and to transfer the same to a point beyond the District limits. An apparatus was at last offered by 'The Odorless Excavating Apparatus Company,' and submitted to the utmost scrutiny. It consists of a portable pump with valves of peculiar construction, for raising the contents of the vault, an air-tight tank into which the material is discharged through conducting hose, and a charcoal furnace in which the noxious gases are consumed and rendered odorless. This apparatus in its successful operations seemed to leave nothing to be desired. Nevertheless, conditions were likely to occur in cities supplied with vaults which must be provided against; for example, when the excremental matter becomes hard or solid on account of the sandy or porous nature of the soil absorbing the fluid portion, and therefore not perfectly removable by the pump To obviate this difficulty the inventor has devised a simple awning, inclosing the doorway of the privy, so as to screen the operation of filling the air-tight barrels used in this connection, and at the same time to prevent the escape of noxious gases by consuming them in a furnace attached to the awning. After being satisfied that this apparatus would accomplish thoroughly the work, a contract was entered into with the company for the period of one year, requiring the emptying of privy boxes in the day time without the least offense, and the prompt delivery of their contents at certain wharves, from which the removal to the place of final deposit becomes the duty of another party. At the expiration of the year, and, consequently, of this contract, proposals were issued for the means of continuing this work, and a number of competing methods were presented for the consideration of the Board.

"Much time and attention were devoted to experiments with the various machines offered, and the conclusion became inevitable that the apparatus previously adopted was the best in use, and thoroughly accomplished the purpose desired. Accordingly, a contract was entered into with the same parties for five years, and the condition annexed that if at the expiration of three years any better method should be discovered, then the contract to be considered null and void.

"The Board of Health, and the community especially, deserve to be congratulated upon the successful reform instituted and steadily maintained in connection with the disposition of night-soil. While the cities of Washington and Georgetown are thus relieved of the most oppressive of all nuisances, the death

rate has been sensibly diminished. Stimulated by our example, other sanitary bodies are looking to this or a similar method for the removal of night-soil without offense or mischief to health. The best evidence of the value of the apparatus now in use in this District, is in the fact of its rapid and general introduction into other sections of the country. Among the cities into which it has been already introduced may be enumerated Boston, Providence, Pawtucket, Brooklyn, New York, Jersey City, Elizabeth, Newark, Philadelphia, Wilmington, Baltimore, Washington, Georgetown, Alexandria, Norfolk, Charleston, Savannah, New Orleans, Memphis, Detroit and Grand Rapids."

Extract from Report of Board of Health of Boston, for 1874:

"The removal of night-soil in thickly settled communities, is a subject of so much importance that our report would be incomplete without something more than an allusion to it. And what we would say upon this subject has been so much better said by a learned and scientific gentleman, Dr. C. C. Cox, of Washington, President of the Board of Health of the District of Columbia, that we freely copy from the late report of that Board:

(Here follows the Report of the President of Board of Health of District of Columbia for 1873, as already given.)

"We also quote the following from the Board of Health Report of the City of Baltimore for 1873:

(Here follows the Report of Baltimore Board of Health for 1873, as already given.)

"At our request, in the latter part of July last, (1873,) this apparatus reached Boston. The first exhibition given of it here was on the 29th of July, on the market grounds between India street and Atlantic avenue. There were present the Mayor, City Council, the City Physician, the Superintendant of Health, one or more night-soil contractors, the Board of Health, and a large number of citizens. A hogshead was filled with dirty water, rags and clothing. The pump emptied it several times over, refilling it as emptied, forcing the rags through the hose without any apparent difficulty. A more practical experiment was demanded, and a vault filthy enough was soon found on Wharf street. It was opened and the pump applied, this time the contents passing through the hose into the tank. The judgment of every one present was that there was no odor whatever, and the experiment was a success. It was afterwards tried on the Stony Brook road in this city, by two of our night-soil contractors with success.

"By this process vaults may be emptied on a midsummer noon without offense. The tank, containing six hundred and forty gallons, may be filled in from ten to fifteen minutes. In view of these facts, the question at once occurred to us, how long ought we to tolerate the old method, particularly as Washington, Baltimore, Brooklyn, New York and other cities were using this method? We take a just pride in what is on the surface in our city, and take pains that everything shall be sweet to the senses as it is pleasing to the eye; let us see to it then, above all things, that everything within and underneath is clean. There are in the city four night-soil contractors. These contracts

are in writing and run three years. By annexation Charlestown has become a part of Boston, and the contract for that city terminated May 1st, 1874. On the 21st of March your Committee on Health advertised for proposals again for Wards 20, 21 and 22. The proposals were to be offered up to March 28th. By the kindness of that Committee the proposals were allowed to rest, and we were permitted to present this subject before them. They gave earnest attention to it, for they believed it important. They, as we, asked if it is feasible and will do the thing it promises, why not adopt it? Our other contracts under the old method do not expire until January 1, 1875. Two questions arose: 1. Are the contractors willing to rescind their contracts and make another under the new method, or take their chances with the others in offering proposals? 2. What will be the cost of emptying vaults with the new Apparatus? These were important questions. The first one was answered in the affirmative by two of the contractors, and substantially so by the others, if they could see their way clear to purchase a right. The second question is not fully determined, except by two of the contractors, who computed upon the subject and found they could empty vaults under the new process at an expense only a little exceeding the former price.

"On the 31st of March last, four of the contractors went together to Brooklyn to test the machine, and came back satisfied with the results. The machine was here again on the 25th of April, and experiments made with it were successful. A more public exhibition and practical test were then given on the 27th, witnessed by the Committee on Health, several Aldermen, the Mayors of Cambridge and Somerville, the City Physician, the Board of Health and others, and all seemed perfectly satisfied with the result. It is earnestly hoped by us that this or some similar method may at once be adopted in our city."

Extract from the Report of Board of Health of Baltimore, for 1874.

"The Commissioner of Health has again the honor to present the Annual Report of the Health Department, for the year ending October 31st, 1874. By an examination of the tables herewith submitted, it will be observed that the general health of the city has been singularly good and though the figures show a small increase in the total mortality list over last year, no epidemic or contagious disease has prevailed during the past twelve months.

"The fatality of Cholera Infantum during the heated term, together with a most unusual increase in the number of deaths from Phthisis Pulmonalis will fully account for this.

"The first of these your Commissioner still holds to be mainly due to the continuance of that most intolerable nuisance, namely—the opening of privy-vaults, and the nightly transportation of their contents through the streets of the city.

"Again and again has the Health Board entered their protest against this practice so destructive to the public health, and as often have these efforts proved ineffectual. It cannot be possible that the citizens of Baltimore view

with indifference this wholesale 'slaughter of the Innocents.' The mortality from this cause alone during the months of June, July, August and September forms a record appalling to contemplate.

"It is true that the same mortality has prevailed iu other cities, but so far as my knowledge extends, is coincident with the same pernicious practice.

"It becomes the duty, therefore, of the Board of Health to reiterate their protest and to insist upon such legislation on the part of the City Council as will modify this crying evil.

"The time is fast approaching when the City Government will be forced to seek another and more permanent place for the deposit of garbage and night-soil, and your Commissioner begs leave to recall to the minds of those who may or may not remember, his urgent recommendation of a plan (more than a year ago) of transportation by rail to a distance beyond all possibility of complaint from any quarter. This plan is perfectly feasible, and already the well known and enterprising Odorless Excavating Apparatus Company of this city, are offering to remove in tight tanks, in an odorless and inoffensive manner, the whole amount of night-soil removed by The Odorless Excavating Apparatus.

"This should be the only mode of doing this work allowed in the city, and I trust the time is not far distant when all classes of citizens, everywhere, will appreciate the importance of this matter.

"The plan of removal by rail is also quite practicable with regard to the garbage and street dirt, and not only can a considerable sum be saved to the City annually, but at the same time a great nuisance abated, as well as a benefit conferred upon those who take it off our hands. By proper management and machinery, every particle of the night-soil and garbage as well as all other kinds of refuse of the city, can be converted within forty-eight hours after it is taken from the city, into a rich and valuable fertilizer, inodorous and capable of transportation anywhere.

"In a word, your Commissioner desires to make the Health Department of Baltimore a model of sanitary perfection, and thereby Baltimore the most healthful city in the world.

"To accomplish so great and desirable an end, the prompt and hearty coöperation of the Clty Council is essential.

"In conclusion, therefore, I would most respectfully recommend first, the exclusive adoption of the Odorless Excavating mode of emptying privies of night-soil, and its removal by rail to a distance in the manner above described. Second, that the garbage and refuse of every description be disposed of by rail in a similar manner."

COMMENTS OF THE PRESS.

WASHINGTON REPUBLICAN, *October 16th, 1873.*

"To-day the ordinance adopted by the Board of Health, providing that the nuisance of which our people had so much reason to complain in the removal of night-soil shall be abated, goes into force and effect. The machinery with which the removal is now to be made has been fairly tested, and has proved to

be all that its owners and inventors promised for it. We congratulate the people of the District upon this important event, an event which not only assures them comfort, but adds to the sanitary condition of the community."

EVENING NEWS, (Baltimore,) *January 9th, 1874.*

"Since its introduction in this city some five or six months ago, we have watched the operations of the improved system with interest, believing it to be an improvement of great value in promoting the health and comfort of the community, inasmuch as the work of emptying vaults, sinks, cesspools, &c., which, as heretofore done, is too well known to need comment, can now be successfully accomplished in the usual working hours of the day, and without creating the least offense. This relieves the community, not only of a most grievous nuisance, but a fruitful source of disease.

"Moreover, the necessity of throwing one's premises open in the dead of night and exposing them to depredations, is entirely avoided. In addition to these important advantages is the fact that no property owner need be in ignorance of the actual amount of work done, which is correctly shown by an indicator on the apparatus. The impositions frequently practiced are thereby avoided, and a system at once efficient, reliable and inoffensive is substituted.

"The only wonder is, that with all the appliances of the present age, and all the vaunted achievements of science, such a gross and intolerable system as that now in use, should not long ago have been superceded by some such system as that now inaugurated by The Odorless Excavating Apparatus.

"It has remained for Baltimore ingenuity and enterprise to design and perfect a system that must stand prominent in the line of modern achievements. The apparatus has met with encouraging success in other cities. In the National Capital it has been adopted by the Board of Health as an important sanitary measure, to the entire exclusion of the old system. It has also been apopted in New York, Brooklyn, Wilmington, (Del.,) Savannah and New Orleans, and the field of its usefulness is rapidly extending. With this system well established, there can be little doubt that the death rate, particularly among children, will be largely reduced.

"Let us hope, therefore, that it will receive the support and encouragement from the community it so justly deserves."

PHILADELPHIA ENQUIRER, *November 13th, 1874.*

"Yesterday morning an apparatus, devised for emptying in the daytime vaults, sinks and cesspools without offense, was presented before the Public Health Association at Thirteenth and Locust streets, as a valuable sanitary reform. After the regular morning session the Association adjourned to witness, in conjunction with the Board of Health of this city, the apparatus alluded to, in practical operation. The tank was placed on Locust street below Thirteenth, and the hose was connected with the vault of a house in the neighborhood.

"The apparatus is known as 'The Odorless Excavating Apparatus,' and consists of an exhaust and force pump worked by hand, from which a four

inch hose is carried to the bottom of the sink. A section of hose also proceeds from the pump to an air-tight receiver of eighty-five cubic feet capacity. When the pump is set in motion, the contents of the sink are drawn out from the bottom and delivered into the receiver without the slightest exposure to the air. Connected with the tank is a deodorizing attachment for the purpose of consuming the noxious and pestilential gases as they are forced out of the tank by the inflowing of the contents of the vault.

"The capacity of the pump to pass solid material was first exhibited by forcing through it a quantity of old clothing, blankets, bricks, bottles and other articles. This property of the pump is due to the peculiar construction of the valves, which are made of vulcanized rubber.

"After the exhibition of passing solid material through the pump had been made, the hose was dropped into the bottom of the vault, and in about ten minutes the entire contents were transferred to the air-tight tank without any perceptible odor.

"The exhibition appeared thoroughly satisfactory in every respect, the apparatus doing its work in an expeditious and inoffensive manner.

"It was the universal opinion of those who witnessed the exhibition that the general adoption of the system for emptying vaults and cesspools would inaugurate a valuable sanitary reform, and by the consumption of the noxious gases generated in such places, remove the source of epidemics and wide-spread disease."

ELIZABETH, (N. J.) DAILY JOURNAL, *November 17, 1874.*

"Friday afternoon, the Board of Health of this city, members of the City Council, gentlemen of influence, and members of the press, were notified that The Odorless Excavating Apparatus Company would exhibit the working of their apparatus at Nos. 49 and 51 Broad street, and were invited to be on the grounds and witness the same.

"Fully a hundred of the city and county officials, and other gentlemen, accepted the invitation, rather of the opinion, perhaps, that the apparatus in question, while competent to perform the work, would be more or less objectionable either because of extra expense, imperfect confinement of odors or some such difficulty.

"The operation was to be tried on the large vaults in the rear of the building. A portable tank was backed up to the sidewalk, and to this about one hundred and twenty feet of four inch hose was attached. Within twenty feet of the vault the pump, which was a very powerful one, was placed, and the operation commenced. Inside of fifteen minutes two large tanks, each holding twice as much as the ordinary night-soil carts, were filled, and not a breath of air was tainted with an odor, nor was there the least leakage or appearance of filth. The hose lay directly across the sidewalk, the tank stood at the gutter, and yet scores of people, ladies and gentlemen, passing by, could not tell what was going on without asking questions. The work was perfectly done. The apparatus is certainly a most complete one for the purpose, and in comparison

with the ordinary cart and bucket method, which leaves the air reeking with offensive odors and sickening gases which permeate every nook and crevices for blocks around, it is certainly as much superior as can be conceived.

"It is said an ordinance has been introduced in the Council in this city, and is now in the hands of the Law Committee and City Attorney, directing that no other process than this shall be used for cleansing the vaults in this city. As a sanitary measure, this is advocated by all our city physicians, and it is, as a matter of cleanliness, infinitely superior to the old method. In Boston and Baltimore, in cases where there are no alley ways, the hose is not unfrequently laid directly through the rooms, with no discomfort, disorder, or inconvenience to the occupants. The expense of having a vault cleaned by this apparatus, is no more—and sometimes less than by the old method."

WASHINGTON CHRONICLE, *November 22, 1874.*

"The removal of night-soil from the vaults of a city more nearly concerns the health of the community than is generally supposed. For ages the most enlightened sanitarians have been in quest of a method of removal that would be both efficient and inoffensive, and The Odorless Excavating Apparatus appears to have fully met the varied requirements of the service. This new process employs a patent force pump and deodorizing apparatus, by which the work is done in the day time, even on thoroughfare streets, absolutely without offense to the most fastidious, and thus an operation hitherto the most offensive and pernicious to health and comfort, is now performed on the most strictly sanitary principles, and to the unqualified satisfaction of the community.

"The Health Board of this city, composed of intelligent gentlemen, were not slow to appreciate the decided advantages of the new process, particularly when all its recognized benefits could be secured at a reduction to tenants and property holders of one-fifth the cost of the old process, which was a relic of barbarism and a discredit to the inventive genius of the age. Nor have they been hasty. A precautionary contract was awarded twelve months since, and the new system put upon proper probation. The success of the operation far exceeded the promises of the Company, and fully met the most sanguine expectations of the Board. At the termination of the original contract, and after patiently investigating various plans offered in competition with 'The Odorless Process,' they cheerfully awarded the unrivalled claimant a contract extending over five years, as in view of a protracted time the Company was disposed to make concessions which a short time would not justify. Thus may we congratulate the inhabitants of the District, for in this instance a conceded improvement has been introduced without causing either direct or indirect taxation.

"It is needless to refer to the offensiveness of the old system, for now it is one of the things of the past which progress forever leaves in its wake."

Farther information can be had concerning the working of the improved system, purchase of rights, cost of apparatus, &c., at the office of THE ODORLESS EXCAVATING APPARATUS COMPANY, *44 North Holliday Street, Baltimore.*

LEWIS R. KEIZER,

President and Treasurer.

WILLIAM PAINTER,

Secretary.